BRIGHT III

USER MANUAL

Please read this manual carefully and keep its instruction in mind when using your BRIGHT III paraglider

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1. INTRODUCTION

Congratulations on buying your new GRADIENT – BRIGHT III ! We believe that you will be very enthusiastic about its performance and flight characteristics and we are sure you will be fully satisfied with your new paraglider.

BRIGHT III is classified as a basic-intermediate paraglider (category DHV 1) and therefore is meant for the widest flying public: from fresh pilot licence holders to the long-time experts who, for some reason, don't fly often and therefore require not just high performance but also exceptional safety from their paragliders.

This manual will help you become familiar with your new paraglider and also provides information which will allow you to get the best from your glider and keep it in good condition.

If you have any further questions after reading this booklet, please do not hesitate to contact our company or any authorised dealer and we will gladly answer all your questions.

When you have become familiar with your new BRIGHT III we would welcome any feedback that you might have about your new paraglider.

2. DESCRIPTION OF PARAGLIDER

2.1. Technical description

- BRIGHT III has an elliptical ground plan with a slight positive contortion of the leading edge. This which means that the "ears" (stabilo) of the parachute curve gently backwards. This modern design gives quite a few advantages.
- The profile is specially chosen for its aerodynamic stability, as suits a paraglider in the DHV1/STANDARD category. It's maximum relative thickness is 17 %; the layout of thickness and camber of the central curve was chosen to give the maximum resistance to premature air flow separation and against spontaneous collapse of the leading edge. These qualities are supported by suitable location and the size of the cell openings.
- Four rows of lines (A, B, C, D) are used for the upper suspension system. Suspension lines of rows C and D combine into main lines so a system of three carrying risers can be used. This method helps to reduce drag and gives maximum simplicity which pilots will appreciate especially during the pre-flight checks and on launch.
- BRIGHT III has a sophisticate concept of suspension system with progressively differing diameters of lines.
- BRIGHT III is certified to be flown with a foot operated speed system. The standard speed system supplied has two pulleys with a working range of 12 cm. BRIGHT III is equipped by split A-risers for easier big-ears.

2.2 Technical data

BRIGHT III	**24**	**26**	**28**	**30**
Area	23.94 m^2	26.98 m^2	29.89 m^2	32.64 m^2
Span	10.70 m	11.35 m	11.95 m	12.49 m
Aspect ratio	4.8	4.8	4.8	4.8
Proj. surface area	20.86 m^2	23.50 m^2	26.04 m^2	28.44 m^2
Proj. wingspan	9.03 m	9.59 m	10.09 m	10.54 m
Proj. Aspect ratio	3.9	3.9	3.9	3.9
Max. chord …….....	2.77 m	2.94 m	3.09 m	3.23 m
Min. chord …….....	0.65 m	0.66 m	0.69 m	0.72 m
No. of cells	40	40	40	40
Lines diameter	Dyneema 1.1/1.3/1.4 mm, Aramid 1.3/1.5/1.8/2.0 mm			
Max. line length (B) ...	6.49 m	6.89 m	7.25 m	7.57 m
Weight	4.8 kg	5.3 kg	5.8 kg	6.1 kg
Min. take-off weight ...	60 kg	75 kg	90 kg	100 kg
Max. take-off weight...	80 kg	95 kg	110 kg	130 kg
DHV category …….	1	1	1	1

Flying weight is the weight of the pilot including equipment and paraglider (approx. 18-20kg)

2.3. Specifications of materials

Canopy

Upper Sail …….. Porcher Marine 9092 SKYTEX, Water repellent, 45 g/m^2
Bottom Sail……. Porcher Marine 9017 SKYTEX, 40 g/m^2
Ribs ..... Porcher Marine 9092 SKYTEX, Hard Finish, 45 g/m^2
Reinforcements ..... Dacron 160 g/m^2 , Scrimm 180 g/m^2

Suspension system

Lines ..... Cousin Dyneema 979/1.1 ∅ 1.1 - strength 98 daN
Edelrid Dyneema 7850-100 ∅ 1.1 - strength 100 daN
Edelrid Dyneema 7850-130 ∅ 1.3 - strength 130 daN
Edelrid Dyneema 7850-160 ∅ 1.4 - strength 160 daN
Edelrid Aramid 7343-140 ∅ 1.3 - strength 140 daN
Edelrid Aramid 7343-190 ∅ 1.5 - strength 190 daN
Edelrid Aramid 7343-240 ∅ 1.8 - strength 240 daN
Edelrid Aramid 7343-280 ∅ 2.0 - strength 280 daN

Risers ..... PAD 1,6/25 mm
Pulleys ..... AustriAlpin Parafly; Riley
Carabiners ..... Maillon Rapide ∅ 4 mm

3. CERTIFICATION

All sizes of BRIGHT III have a German certification (Gütesiegel) **DHV 1**, made in accordance with a **new DHV 1 Standard.**

BRIGHT III 24 under the number **DHV GS-01-1543-06**
BRIGHT III 26 under the number **DHV GS-01-1484-06**
BRIGHT III 28 under the number **DHV GS-01-1485-06**
BRIGHT III 30 under the number **DHV GS-01-1486-06**

All information of certificate DHV are written on a label in the front part of the middle rib.

The Gütesiegel is valid for all harnesses of ABS type. This type of harnesses enables a certain degree of adjustment to be made to the length of the waist strap. 42 cm is the recommended distance between the carabiners.

The following point applies to the BRIGHT III in common with all other paragliders. When loosened cross-bracing is used the pilot's weight shift control is greater. The glider is also more sensitive to the movements in the surrounding air. When the cross-bracing are tighter, the pilot feels subjectively more stable but turning by weight-shifting is practically ineffectual.

NOTICE: ***Paraglider BRIGHT III is constructed for hill or tow launches. Use of subsidiary motor has not been tested for by the manufacturer or by the DHV!***

THIS GLIDER IS NOT MEANT FOR JUMPING FROM A PLANE, BALLOON OR FOR JUMPS WITH A BELATED OPENING OF THE CANOPY!

4. ADJUSTING YOUR GLIDER

Every BRIGHT III, before it is given to a customer, goes through a final check-up and test-flight to verify that its characteristics and measurements correspond to the manufacturer's specifications. You may only make adjustments to the break line lengths or to the speed system of your BRIGHT III and only then in keeping with the recommendations of this manual.

Other adjustments or changes to your BRIGHT III lead to a loss of guarantee, airworthiness and validity of the Gütesiegel DHV – an amateur modification may endanger yourself and other pilots. If you do have any suggestions on improvements let us know and our test-pilots will try out your ideas without risk to yourself.

4.1. Brake line adjustment

When you receive your new BRIGHT III the brake line-length is adjusted to be the same as that used during the DHV tests. This length should suit most pilots and is indicated on the main control line. It is of course possible to adjust the break line length to suit each pilot's physical build, height of harness hang points, or style of flying. We recommend that you act wisely when adjusting break line length.

Break lines that are too short may:

1) lead to fatigue from flying with your hands in an unnatural position.
2) impede recovery from certain unstable manoeuvres and
3) will certainly reduce your glider's speed range.

Brakes that are too long will:

a) hamper pilot control during launch,
b) reduce control in extreme flying situations, and
c) make it difficult to execute a good flare when landing.

Each break line should be tied securely to its control handle. Only use knots which will guarantee this such as a dragon's knot, etc.

4.2. Addition of speed system

BRIGHT III is equipped with a foot operated speed system as standard. Pressure on the foot stirrup shortens the A and B risers and by this, reduces the angle of attack of the canopy. Thanks to the relative lengths of lines C and D, near the trailing edge, the profile is inclined in a way that preserves the aerodynamic characteristics of the wing. The working range of the speed system pulleys is 12 cm. Make sure you can utilise the whole of this range when you attach your speed stirrup. For some pilots this will require the use of a two step speed stirrup.

5. FLIGHT OPERATIONS

This manual is intended as a guide to the characteristic features of your new BRIGHT III paraglider. Under no circumstances should it be as a "learn-to-fly" manual for paragliding or as a substitute for a paragliding pilots training course.

5.1 Standard flight regime

5.1.1 Pre-flight check

A thorough pre-flight check is essential for safe flying and that's why you should pay special attention to it. Above all you should check that the canopy, lines and risers are free from damage and tangles. Also don't forget about your harness and your reserve parachute.

Before the launch spread the canopy out into a slight arc and check that:

- all cell openings are free
- no lines are looped around or under the canopy
- no lines are tangled or have a knot on them
- any twigs, grass or other objects are not entangled in the lines or the canopy
- risers are not twisted
- control lines run freely through the pulleys
- knots on control handles are secure
- carabiners on risers are tightened

5.1.2 Launch

Launching the BRIGHT III is straight forward, either by front launch or by reverse launch. A dynamic pull of the front risers (A) will bring the canopy simply and easily above the pilot's head. The canopy inflates from the centre equally and fluently. BRIGHT III has no tendencies to outrun the pilot and quickly stabilises above the pilot. Don't forget about visually checking the canopy and its lines before the actual launch!

Take off can be made easier by a light pull on the brakes.

5.1.3 Flight

When the brakes are loose, BRIGHT III is trimmed to fly at best glide angle. The best sink rate is produced with both the control lines drawn down evenly to about 20%-25% of their range.

Flying in turbulent conditions

When flying through severe turbulence it is recommended that the canopy is stabilised by simultaneously applying a little brake to both sides. Flying with a little brake applied will also help to prevent deflations and allow you to get more feedback from your glider about how the turbulent air influences the behaviour of your paraglider. Responding correctly to the paraglider's movements by means of the breaks and weight shift is known as "active flying" . A pilot demonstrating good active flying skills will significantly reduce both the number and severity of collapses he or she experiences.

Turning

The BRIGHT III is very comfortable and pleasant in turns. The handling characteristics are very responsive and accurate and demand no special habits or non standard procedures.

When developing the BRIGHT III special attention was devoted to the control forces required to manoeuvre the paraglider. The result is that the break travel and force has been optimised. In flight the control forces firm but responsive and precise and allow for a perfect communication with the canopy. Break pressure is reassuringly progressive. A harness with fairly loose cross-bracing facilitates turning. In an emergency (i.e. a torn control line) can be manoeuvred by steering with the rear risers or by weight shift.

Using the speed system

Maximum speed is one of the strong points of GRADIENT paragliders and the BRIGHT III is no exception. Not only has it got a very high maximum speed, but unlike some other paragliders the full speed range is useable. In spite of this exceptional stability at high speed don't forget that any collapse at full speed will be more sever than the same event experienced at normal trim speed. Always keep both hands on the controls when flying fast in turbulence and be ready to release the speed system immediately at the first signs of a collapse. Use the speed system very carefully or not at all at low altitude.

5.1.4 Landing

Landing with BRIGHT III is very simple and without difficulties. On your first flights you may be surprised at just how well it glides. Take account of this when making your landing approach! Against a wind, at about 1m above the ground you may pull down the brakes all the way. Under zero wind conditions, or if forced to make an emergency landing down wind you may prefer to take a wrap of each control line so as to enable a more dynamic flare.

5.2. Rapid descent

Every pilot will sooner or later be in a position when he/she has to quickly decrease his/her altitude. This situation may come about as the result of a sudden and unexpected change in the weather, Reaching cloudbase and not wishing to enter the disoreentating cloud, or simply because you need to finish your flight quickly. Also if the landing approach takes place through thermals, it is often very difficult to finish your flight without a rapid descent method being employed. There are three main methods for achieving a rapid descent and they are: "Big ears", "B-stall" and "Spiral dive".

5.2.1 Big-ears

This is the easiest technique for a rapid descent. Depending on how much of the wing tip you deflate between 3 to 6 m/s sink rate can be achieved. While in big ears your sink rate and forward speed can be further increased by using the speed system. BRIGHT III can also be steered in big ears by means of weight-shift. BRIGHT III is equipped by split A-risers for easier big-ears.

- initiation: Take hold of the outer A-lines (special A-riser) on both sides as high as possible and pull them down fluently and hold them firmly. The effective area of the paraglider is reduced equally on both sides of the wing. The size of the deflated area depends on how deeply the lines are pulled down, eventually on the number of lines pulled (one or two outer lines on both sides). Be sure to pull both sides equally.

- recovery: Under normal circumstances BRIGHT III opens automatically when the A-lines are released. The opening may be accelerated by gentle repeated braking symmetrically on both sides (slightly "pumping" the breaks).

5.2.2 B-line stall

This flight technique is a very effective way of making a rapid descent. Depending on how much the B-risers are pulled down, the sink rate is between 5 and 10 m/s.

- initiation: Take hold of the B-risers at the top and smoothly pull them down until the canopy shows a spanwise crease where the the B-lines attach to the sail. Your sink rate will increase considerably while your forward speed will decrease to practically zero. Don't be startled when the air flow over the top surface is detached and the canopy enters a parachutal stall without moving forward. It will soon stabilise above your head.

- recovery: On releasing the B-risers BRIGHT III automatically returns to normal flight without staying in deepstall (sackflug) or shooting in front of the pilot. Let go of the risers smoothly and symmetrically.

Caution: *If the B-risers are released unevenly the canopy could enter a turn on release from the B-stall. If the risers are released slowly and very unevenly it could start a spin.*

5.2.3 Spiral dive

The spiral dive is the most effective way of making a fast descent. Every pilot should be able to perform a spiral dive and one day you may need to. Always be aware of your altitude which decreases very rapidly during a spiral dive. The sink rate reached in a spiral dive can be more than 12 or 15 m/s.

During the spiral dive the pilot and glider will experience strong centrifugal forces: the overload could be more than 3 g (!) which is a great demand on the pilot. The glider is strained just as much!

- initiation: Smoothly pull on one brake so that the glider goes from a normal 360-turn into a steep turn and from there into a spiral dive. The transition into a spiral dive can be made easier by weight shifting to the inner side of the turn. Keep an eye on the tension of the control line all the time - reduced tension signalises an overload of the glider and danger of falling into a negative spin.

- recovery: BRIGHT III recovers from a spiral automatically as soon as the brakes are released. Release them smoothly and **always finish a spiral dive with safe altitude!**

Caution: be sure, that your position in the harness is neutral! Recovery from spiral dive could be delayed by weight shifting to the inner side of the turn!!!

5.3 Special flight regimes

No matter what category of canopy you fly or what level of certification it has, in turbulence or in strong thermals you may experience all kinds of collapses. BRIGHT III behaves comfortably in these situations, Indeed not only does BRIGHT III deal with extreme flight regimes automatically, but also offers an above average degree of safety. Even so, you must follow all safety rules when practising special flight operations and always pay attention to your altitude!

Before performing special flight regimes remember:

- practise reserve deployment on the ground, in a simulator, so that reserve deployment is automatic and efficient.
- Rapid altitude loss and considerable rotational forces may develop during unstable manoeuvres. Take account of these factors in the context of reserve deployment!

5.3.1. Collapse of one side of the canopy

- initiation: Take hold of the outer A-lines on one side and pull them down smoothly. The wing tip will collapse downward forming a characteristic "big ear". The size of the ear depends on the depth to which the lines are pulled as well as the number of lines pulled down. You can stop any tendencies to turn by applying the opposite brake and by weight shifting onto the inflated side of the canopy.

- recovery: Under normal conditions BRIGHT III will re-inflate spontaneously when the pulled lines are released. The inflation time and loss of altitude can be reduced by suitable action of the pilot. To stop any tendencies to turn off course pull brake on the inflated side (be careful not to overreact and stall the inflated

side) and weight shift to that side. If the collapse remains then reinflate the collapsed side by "pumping" the brake on the collapsed side to quicken the inflation.

5.3.2. Frontal collapse of canopy

- initiation: Take hold at the top of both A-risers and pull them down until the leading edge collapses.

- recovery: In normal conditions BRIGHT III recovers normal flight automatically as soon as the front risers are released. Opening may be assisted by applying the brakes on both sides simultaneously.

5.3.3. Deep stall ("sackflug")

- initiation: Pull both brakes smoothly until the sink rate increase markedly and the forward speed reaches almost zero. The pull on the brakes should be controlled so that the canopy stays inflated and doesn't fall back into a full stall.

- recovery: BRIGHT III cannot stay in this regime of deep stall flight, so after the brakes are released the glider automatically and returns into normal flight. If you need to, you may accelerate the recovery of the glider by one of two methods: Either you can pull both brakes intensely followed by a fast release of brakes or you can pull on the A-risers lightly.

Caution: *If you pull on the A-risers too intensely you may experience a frontal collapse of the leading edge.*

5.3.4 Full stall

- initiation: Wind the control lines once or twice around your hands and pull both of them down smoothly. Hold them down until the canopy falls behind the pilot and deforms into a characteristic crescent shape. Hold your hands firmly (press them against the seat) and be careful that you do not release the brakes prematurely or asymmetrically.

- recovery: BRIGHT III recovers from a full stall automatically after brakes are fluently released. During correct recovery from a full stall the BRIGHT III shows no extreme tendencies such as a strong surge in front of the pilot. In the case of the brakes being released prematurely or too quickly there is a possible tendency for the glider to surge ahead of the pilot. This can be corrected for by adequate braking on both-sides simultaneously.

Caution: *It is common that when brakes are released asymmetrically a massive asymmetrical collapse may arise followed by a tendency to enter a spin.*

5.3.5 Negative spin

- initiation: Slow down by braking to nearly minimum speed. Then pull a brake on one side all the way down while simultaneously releasing the brake on the other side. Because the stalled side falls back, the canopy suffers air flow separation over one half of the wing which results in a spin and a rapid loss of altitude.

- recovery: Under normal circumstances BRIGHT III s capable of recovering from a negative spin automatically when brakes are released.

Caution: In general when there is a very fast or a long-lasting rotation and when the brakes are released too quickly, the canopy may shoot in front of the pilot followed by a massive asymmetrical collapse.

Warning: *In all regimes where the air flow is separated there is always a rapid increase in sink rate and therefore a substantial loss of altitude.*

And remember: *A wrong manoeuvre at the wrong time may change a fairly easy situation into a dangerous problem and furthermore you are exposing your glider to forces which may damage it. So practise your pilot abilities for these special flight regimes only under the supervision of your instructor and with a reserve parachute!*

6. MAINTANENCE AND STORAGE

If you handle your glider with care and store it in a suitable place it can last you a very long time. On the other hand neglecting maintenance, bad storage and the use of unsuitable cleaning products can reduce the lifetime of your glider significantly or may even make a dangerous subject out of it.

You must keep to these rules:

- Choose a suitable area for your launches. Lines caught on roots or rocks lead to unnecessary strains on the attachment tabs during inflation. Snagging lines may rip the canopy tissue or damage lines.
- When landing, never let the canopy fall on its leading edge in front of the pilot. The effect of these forceful collisions and the sudden pressure increase can

severely damage the air resistant coating of the canopy as well as weakening the ribs and seams.

- Protect the canopy from unnecessary strain. Inconsiderate handling of your glider, namely pulling it over grass, soil, sand or even over rocks, will significantly reduce its lifetime and increase its air-porosity.
- When preparing the paraglider for a launch or when ground handling, be sure not to step on any of the lines or the canopy.
- Don't tie any unnecessary knots in the lines. A packing method where special knots are made in the lines as used on parachutes and reserve parachutes aren't suitable for packing the lines used on paragliders.
- Protect your canopy and lines from unnecessary exposure to sunlight. UV-rays can damage many parts of a paraglider.
- Even if BRIGHT III is made from Water-repellent fabric, **try not to pack your glider when wet!** If there's no other way then dry it as soon as possible but away from direct sunlight.
- Don't let your glider come into contact with sea water. If it does, rinse (the lines, canopy and risers) with fresh water and dry before storing.
- After flight or when storing, always use the inner protection sack.
- When storing or during transport make sure your glider isn't exposed to temperatures higher than 50 degrees Celsius.
- Never let the glider come into contact with chemicals. Clean the paraglider with clean lukewarm water only.
- For long-term storage don't pack the glider too tightly and store it in a cold, dry and well-ventilated room.
- After tree- or water landings always examine the glider carefully. If you suspect that the flight features of your paraglider have changed, contact the nearest authorised GRADIENT supplier as soon as possible.
- After 200 flying hours or after 2 years at the latest your BRIGHT III must be thoroughly checked and tested by the manufacturer.

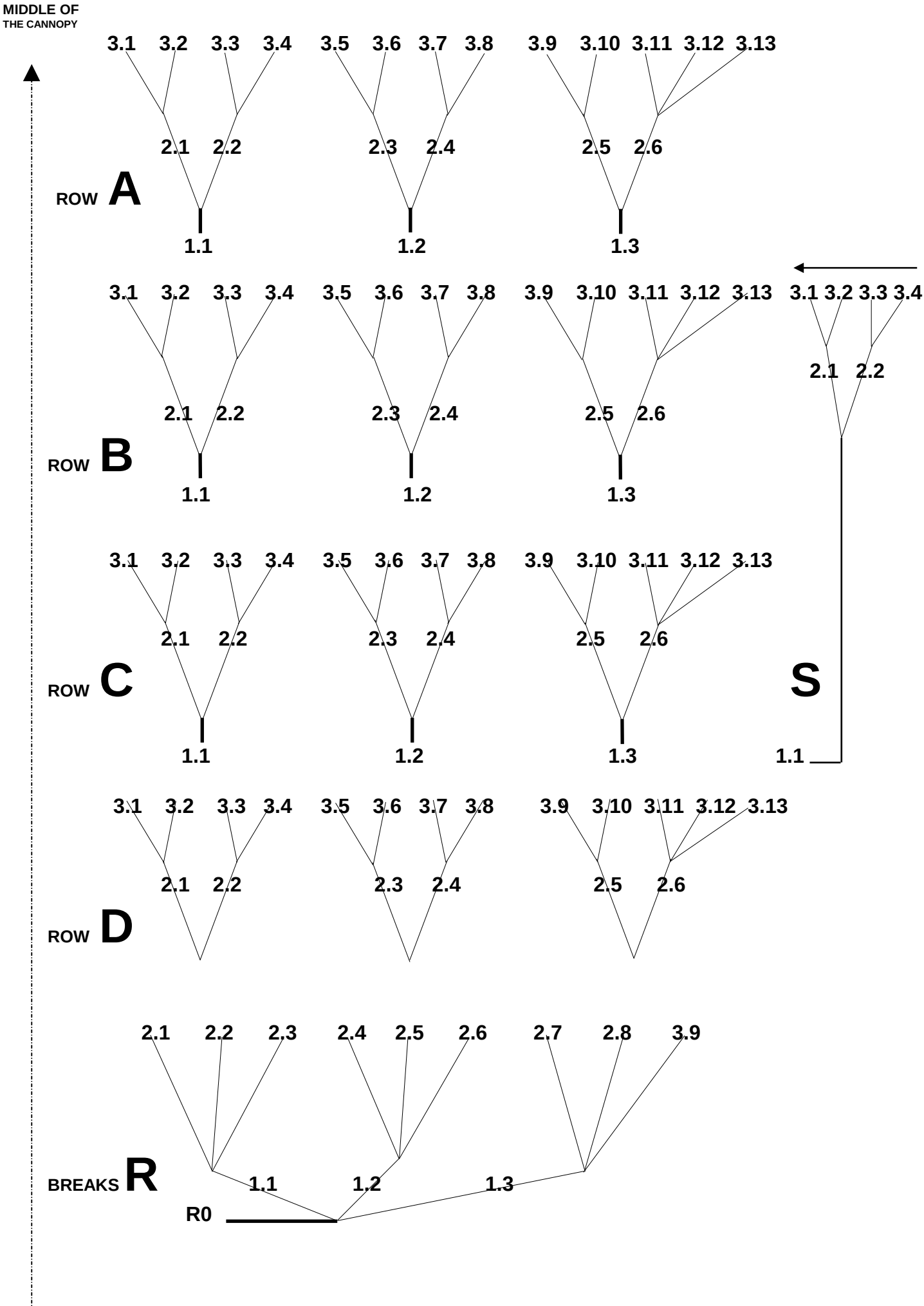
7. REPAIRS

Only small repairs may be done by the user which means repairs that don't change the airworthiness of the paraglider. Among these are fixing small tears (besides seams) up to 10 cm, changing damaged lines or the change of rubber line-fixation-rings on the small carabiners.

When repairing your paraglider on your own keep the following rules:

- When repairing the sail use self-adhesive patch specified for this purpose. To every BRIGHT III the manufacturer encloses an amount of self-adhesive material which is enough for usual repairs during the usage of your paraglider.
- The only admissible repairs done on lines are those where the damaged lines are changed for new ones, exclusively supplied by the manufacturer of BRIGHT III, authorised dealer or service. When putting an order for lines use code indicators given in the attached diagram of suspension lines. Also give the indicator “BR III” (BRIGHT III) and the size of the canopy of your glider, i.e. BR III 24, BR III 26, BR III 28, BR III 30 followed by the line code;
  for example:
  - the outside long line in line A for BRIGHT III 28: **BR III 28 A 1.3**
  - the front upper stabilo-line for BRIGHT III 26: **BR III 26 S. 3.1**
- An exception is changing a control line in the terrain. For this purpose the manufacturer encloses a spare line with every BRIGHT III with a prepared loop on one end. The right length should be adjusted according to the same line on the opposite side of the canopy and then attach your break handle. As soon as you can yourself swap the line for an original one from your authorised GRADIENT service centre.
- After any changing of lines a thorough pre-flight check must be done! Don't hesitate to ask your instructor or an experienced colleague for help. If you're not sure, entrust the job to either the manufacturer or an authorised GRADIENT dealer.
- If you have to replace any of the line-tidy rings (a spare ring is supplied with each BRIGHT III), don't forget to check that the lines haven't been swapped accidentally and that they are returned to the small carrabiner in the correct order.

BRIGHT III – system of suspesion



8. CONCLUSION

Even though BRIGHT III has outstanding performance and stability, it must be understood that even the safest paraglider is an aircraft and that all airsports can be relatively dangerous.

Remember that your safety lies in your own hands and that "lucky pilots are well prepared pilots".

Never underestimate weather conditions and never forget that you are flying for pleasure and not to become a „fallen Hero". Remember this and the fun that only free-flying can bring will be yours.

We believe that your sensible attitude and the flight characteristics of your BRIGHT IIIwill combine to ensure you Fantastic flying.

GRADIENT wishes you many fabulous flights and happy landings.

ONDŘEJ DUPAL VÁCLAV SÝKORA